

**REMARKS*****Status of the Claims***

Claim 4 has been amended to recite “A computer implemented method  
 ...obtaining a list of polymers to be synthesized on the substrate; and  
 dividing the polymers to be synthesized on the substrate into a plurality of unassigned  
 blocks...assigning each unassigned block to an empty slot on the substrate for synthesis  
 by minimizing edge count comprising...wherein the one assigned block creates an  
 arrangement of the polymers resulting in a least edge count among the subset of blocks.”  
 Support for the amendment may be found, for example, on page 20, lines 8-10, page 16,  
 lines 14-22, page 5, lines 17-22, and page 6, lines 1-6.

Claim 25 has been amended to recite “A computer software product...code for  
 obtaining a list of polymers to be synthesized; and code for dividing the polymers to be  
 synthesized on the substrate into a plurality of unassigned blocks...code for assigning  
 each unassigned block to an empty slot on[the substrate for synthesis by minimizing edge  
 count comprising...wherein the one assigned block creates an arrangement of the  
 polymers resulting in a least edge count among the subset of block.” Support for the  
 amendment may be found, for example, on page 19, lines 20-23, page 20, lines 8-10,  
 page 16, lines 14-22, page 5, lines 17-22, and page 6, lines 1-6,.

Applicant has also amended claims 4-14 and 25-33 to correct informalities.  
 Applicant asserts that no new matter is presented by these amendments and respectfully  
 request entry of the same.

***Rejections under 35 U.S.C. § 101 should be withdrawn.***

Claims 4-14 are rejected under 35 U.S.C. §101 as allegedly being directed to non-statutory subject matter. Applicant respectfully disagrees.

The Office Action appears to have mistakenly suggested that claims themselves must recite a physical transformation step or a useful, tangible, and concrete result in order for the claimed invention to be statutory. According to the Guideline for Patent Eligible Subject Matter (“the Guideline”), to satisfy “the claimed invention otherwise produces a useful, concrete and tangible result”; the Guideline requires concrete result to be produced by the claimed invention, and there is no requirement for actual, concrete result to be actually recited in the claims.

Applicant respectfully submits that the claim invention is directed to useful applications. The claimed invention, for example, claim 4, provides for a computer implemented method for arranging polymers for combinatorial synthesis of the polymers on a substrate. By arranging polymers for combinatorial synthesis of polymers on a substrate, useful application such as manufacturing using photodirected combinatorial synthesis using a set of masks or computer controlled micromirrors can be achieved as stated in the application on page 5, lines 8-10.

Applicant respectfully submits that in view of the above reasons, the rejection of Claims 4-14 under 35 U.S.C. §101 is withdrawn.

***Rejections under 35 U.S.C. § 112 should be obviated.***

1. Claims 4-14 and 25-33 are rejected under 35 U.S.C. 112, second paragraph, as being allegedly indefinite for failing to particularly point and distinctly claim the subject

matter which Applicant regards as the invention. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 4 to recite “obtaining a list of polymers to be synthesized,” and “assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Additionally, applicant has amended Claim 25 to recite “code for obtaining a list of polymers to be synthesized “ and “code for assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Therefore the rejection is obviated.

2. Claims 4 and 25 are rejected because the claims allegedly do not make clear if said “substrate” is directed to an intended use of the instant method, or is required by the instant method. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “the polymers to be synthesized on the substrate.”

3. Claims 4 and 25 are rejected because the claims allegedly do not make clear what is considered “edge count.” Applicant respectfully disagrees because the term “edge count” can be found in the specifications on page 4, lines 3-5 and page 12, lines 11-22.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 4 and 5 as stated above to recite “obtaining a list of polymers to be synthesized,” and “assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Additionally, applicant has amended Claim 25 to recite “code for obtaining a list of polymers to be synthesized “ and “code for assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Therefore the rejection is obviated.

4. Claims 4 and 25 are rejected because the claims allegedly do not make clear what in what way the limitation “wherein each of said block...comprising ...polymers” further limits the instant method. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “dividing the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of the unassigned block of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks.”

5. Claims 4 and 25 are rejected because the claims allegedly do not make clear if the limitation “wherein each of said blocks is to be assigned to one slot on said substrate” to be an active method step a further limitation of said “blocks” or something else. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising:” and “code for assigning...” respectively.

6. Claims 4 and 25 are rejected because the claims allegedly lack an antecedent bases for “said set”. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “in the subset” instead of “in said set”.

7. Claims 4 and 25 are rejected because the claims allegedly do not make clear in what way one of skill in the art would be able to select from “unassigned blocks.” Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite as stated above, “assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising:” and “code for assigning...” respectively.

8. Claims 4 and 25 are rejected because the claims allegedly do not make clear in what way “assigning one block” results in “least edge count.” Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “...polymers resulting in a least edge count among the subset of blocks.”

9. Claims 4 and 25 are rejected because the claims allegedly lack an antecedent bases for “an empty slot”. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended amended Claims 4 and 25 to recite “an empty slot on the substrate” instead of “one slot on said substrate”.

10. Claims 4 and 25 are rejected because the claims allegedly lack an antecedent bases for “the best fitting”. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 4 and 25 to recite “wherein the one assigned block creates an arrangement of the polymers resulting in a least edge count among the subset of blocks.”

11. Claim 6 is rejected because the claim allegedly does not make clear of the limitation “each of said edge counts represents the result of assigning one block to an empty slot”. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 6 to recite “computing a plurality of edge counts after placing each assigned block into the empty slot and comparing the edge counts from each assigned block and choosing the assigned block that has the least edge count.”

12. Claim 7 is rejected because the claims allegedly lack an antecedent bases for “the first subset among unassigned blocks.” Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 7 to recite “the selecting step comprises first selecting the subset among unassigned blocks.”

13. Claims 8-10 and 29-31 are rejected because the claims allegedly do not make clear whether applicant is referring to a subset of assigned or unassigned blocks. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 8-10 and 29-31 to recite “subset of unassigned blocks.”

14. Claims 8-10 and 29-31 are rejected because the claims allegedly do not make clear of “other” subset. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claims 8-10 and 29-31 to recite “the created arrangement of the polymers.”

15. Claim 11 is rejected because the claim allegedly does not make clear in what way the limitation “said combinatorial synthesis is radiation directed synthesis.” further limits the claimed method. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 11 to recite “further comprising synthesizing the arrangement of the polymers of all the assigned blocks.”

**16.** Claim 33 is rejected because the claim allegedly does not make clear the intended meaning of “taking into account”. Applicant respectfully disagrees because the term “a weighted edge count” can be found in the specifications on page 12, lines 19-22 and page 13, lines 1-3.

**17.** Claims 4-14 and 25-33 are rejected under 35 U.S.C. 112, second paragraph, as being allegedly incomplete for omitting essential steps. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, as stated above, Applicant has amended Claim 4 and 5 to not include “reducing edge count between polymers” and amended Claim 4 to recite “obtaining a list of polymers to be synthesized,” and “assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Additionally, applicant has amended Claim 25 to recite “code for obtaining a list of polymers to be synthesized “ and “code for assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Therefore the rejection is obviated.

**18.** Claims 4 and 25 are rejected because the claims allegedly do not make clear of the limitation “wherein said one block is the best fitting and results in a least edge count...”. Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, as stated above, Applicant has amended Claim 4 and 5 to not include “reducing edge count between polymers” and amended Claim 4 to recite “obtaining a list of polymers to be

synthesized,” and “assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Additionally, applicant has amended Claim 25 to recite “code for obtaining a list of polymers to be synthesized “ and “code for assigning each unassigned block to one slot on the substrate for synthesis by minimizing edge count comprising.” Therefore the rejection is obviated.

Applicant respectfully submits that in view of the claim amendment, the rejection of Claims 4-14 and 25-33 under 35 U.S.C. §112 is obviated.

***Rejections under 35 U.S.C. § 102 should be obviated.***

Claims 4, 5, and 7-13 are rejected under 35 U.S.C. §102 (b) as allegedly being anticipated by Pease et al. (Proc. Natl. Acad. Sci., May 1994, Vol. 91, p. 5022-5026). Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 4 to recite “obtaining a list of polymers to be synthesized on the substrate; and dividing the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of the unassigned block of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks, assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising: selecting a subset of blocks from the plurality of unassigned blocks; and assigning one selected block of the unassigned blocks in the subset to the empty slot, wherein the one assigned block creates an arrangement of the polymers resulting in a least edge count among the subset of blocks.” Therefore the rejection is obviated.



Applicant respectfully asserts that the disclosure of Pease et al. does not describe all of the limitations of independent claim 4 as amended. In particular, Applicant asserts that Pease et al. does not describe the limitations of “assigning each unassigned block to an empty slot on the substrate for synthesis by minimizing edge count.” Applicant also asserts that each of claims 5, 7-13 depend from claim 4 and are thus also patentable for the same reasons.

Applicant respectfully submits that in view of the claim amendment, the rejection of Claims 4, 5, and 7-13 under 35 U.S.C. §102 (b) is obviated.

Claims 4-6, and 25-27 are rejected under 35 U.S.C. §102 (b) as allegedly being anticipated by Li et al. (Genomics, 1997, Vol. 40, p. 476-485). Applicant respectfully disagrees.

However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 4 and 25 to recite “However, for the purpose of expediting the issuance of claims, Applicant has amended Claim 4 to recite “obtaining a list of polymers to be synthesized on the substrate; and dividing the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of the unassigned block of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks, assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising: selecting a subset of blocks from the plurality of unassigned blocks; and assigning one selected block of the unassigned blocks in the subset to the empty slot, wherein the one assigned block creates

an arrangement of the polymers resulting in a least edge count among the subset of blocks.” Additionally, applicant has amended Claim 25 to recite, “code for obtaining a list of polymers to be synthesized; and code for dividing the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of the unassigned blocks of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks, and code for assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising: code for selecting a subset of the blocks from the plurality of unassigned blocks; and code for assigning one selected block of the unassigned blocks in the subset to the empty slot, wherein the one assigned block creates an arrangement of the polymers resulting in a least edge count among the subset of the blocks; and a computer readable medium for storing said code.” Therefore the rejection is obviated.

Applicant respectfully asserts that the disclosure of Li et al. does not describe all of the limitations of independent claim 4 and 25 as amended. In particular, Applicant asserts that Li et al. does not describe the limitations of “obtaining a list of polymers to be synthesized on the substrate; and dividing the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of the unassigned block of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks, assigning each of the unassigned block to an empty slot on the substrate for synthesis by minimizing edge count comprising.” Additionally, Applicant also assert that each of claims 5 & 6 each depend from claim 4 and claims 26 & 27 each depend from claim 25, thus these claims are also patentable for the same reasons.

Applicant respectfully submits that in view of the above reasons, the rejection of Claims 4-6, and 25-27 under 35 U.S.C. §102 (b) is obviated.

### **CONCLUSION**

For these reasons, Applicant believes all pending claims are now in condition for allowance. If the Examiner has any questions pertaining to this application or feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 731-5000.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account 01-0431. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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